AMENDMENTS TO THE DRAWINGS

Please amend Figures 1-2, 4, and 5-7 as shown in the replacements sheets following page 7 of this paper.

ATTACHMENTS: Replacement sheets for Figures 1-2, 4, and 5-7

REMARKS

This Amendment is being filed in Response to the October 23, 2009 Office Communication. In the Office Communication, the Examiner noted that the application is in condition for allowance except for formal matters, and accordingly the Examiner closed prosecution on the merits in accordance with practice under *Ex parte Quayle*. Applicants submit the attached replacement drawings and the following comments in order to address the Examiner's formal objections.

Applicants thank the Examiner for withdrawing claim rejections under 35 U.S.C. §101 and §112 (Office Communication at page 2) and the objection to the Specification from the July 19, 2001 Office Action (Office Communication at page 4).

I. Objection to the Drawings

The Examiner objects to Figures 2, 4, and 5 because each block of the Figures is not labeled. Applicants submit replacement sheets herewith providing labels for each block. The block labels are the same as those described in the Specification at pages 7-10, 13, 16-18, and 21-22. Accordingly, no new matter is added. Applicants respectfully submit that the amendments to Figures 2, 4, and 5 address the Examiner's concerns, and respectfully request that the objection to the drawings be reconsidered and withdrawn.

Although Figure 1 is not objected to, Applicants submit herewith a replacement sheet for Figure 1 so that Figure 1 is aesthetically consistent with the newly-submitted Figures 2, 4, and 5.

The Examiner objects to Figures 6 and 7 because Figures 6 and 7 depict graphs, but the axes of the graphs are not labeled. Applicants submit herewith replacement drawings for Figures 6 and 7 providing labels for the axes of each graph. Support for the axis labels can be found at least in the specification at page 5 lines 14-19, and page 26 lines 12-17. Accordingly, no new matter is added. Applicants respectfully submit that the amendments to Figures 6 and 7 address the Examiner's concerns, and respectfully request that the objection to the drawings be reconsidered and withdrawn.

II. Objection to the Specification

The Examiner objects to the use of the phase factor δ_s as used in the second equation in page 5 of the amendment filed on February 9, 2001. Specifically, the Examiner indicates that it is not clear how to give a value for δ_s. Applicants respectfully offer the following observations. In the following description, Applicants believe the page number citations to be accurate; however, the page numbers may be slightly different in the official version of the document as filed. If the Examiner is unable to locate the specific portions described below, the Examiner is invited to contact Applicants attorney at the phone number provided at the end of this response in order to resolve the issue.

is the phase factor or phase shift. It is can be any independent number, as described for example at page 71, lines 21-25 of the specification:

> Eq. (37.106) gives the probability $P_A\left(\frac{\sqrt{N_1}}{\alpha_1},\frac{\sqrt{N_2}}{\alpha_2},\ldots,\frac{\sqrt{N_s}}{\alpha_s},\delta_s\right)$ of the occurrence of "association" of the corresponding Fourier series based on a first "active" "association ensemble" with modulation given by Eq. (37.50) "coupling" with s separate "association ensembles" each with modulation $e^{-j\sqrt{N_s}\left(\frac{2\pi f}{\alpha_s}\right)}$ given by Eq. (37.50) and <u>independent phase shift, δ_s</u>.

is a refinement parameter of the system that allows the system to recognize a pattern as described in the specification, for example on page 74, lines 4-9:

> In other embodiments of the present invention, further operations may be performed on $\langle\beta_s^2(\phi_s)\rangle$ such as phase shifting, normalizing to a given parameter, scaling, multiplication by a factor or parameter such as a gain factor, addition or subtraction of a given parameter or number such as an offset, etc.

In one embodiment, represents a memory location, as described on page 76, lines 2-16:

> Combining Eq. (37.78), Eq. (37.100), and Eq. (37.101) gives the probability $P_\downarrow(\phi)$ proportional to

(37.102)

where ϕ_s is the frequency difference angle and β_s^2 is the "coupling cross section" amplitude.

According to the time delay property of Fourier transforms [8], a time delay, $\delta(t-t_0)$, during independent activation of a given "association ensemble" with recall from memory is equivalent to a phase shift of the correlation function given by Eq. (37.63)

$$Q(t) = \left\langle \exp i\delta \exp\left[-i\mathbf{k}\cdot\mathbf{u}(l;t)\right]\exp\left[i\mathbf{k}\cdot\mathbf{u}(l;0)\right]\right\rangle \tag{37.103}$$

Thus, Eq. (37.102) is phase shifted.

$$P_{\uparrow}\left(\frac{\sqrt{N_1}}{\alpha_1},\frac{\sqrt{N_s}}{\alpha_s},\delta_s\right) \propto \exp\left[-\beta_s^{-2}\left(\frac{1-\cos 2\phi_s}{2}\right)\right]\cos\left(\delta_s + 2\sin\phi_s\right) \tag{37.104}$$

where ϕ_s is the frequency difference angle, β_s^2 is the "coupling cross section" amplitude, and δ_s is the phase shift.

The phase shift may comprise a parameter of a recognized pattern as disclosed on page 79 line 32 to page 80, line 3:

> Then the "associated" information is ordered or further processed to provide general context such as cause and effect relationships by a mechanism involving the half-width parameters, α_s, the time delay parameters, $\frac{\sqrt{N_s}}{\alpha_s}$, and potentially the independent phase shifts, δ_s, of Eq. (37.106). The ordering of "associated" information is described in SUB-APPENDIX IV--Ordering of Associations: Matrix Method.

In addition to representing a memory location, the phase shift may be used to achieve an association and represent it, as discussed on page 84 lines 10-25:

> Also, multiple other cascades of association "stages" ("association ensembles") may act as delay-line memory actuators that produce a time delay, $\delta(t-t_0)$, during independent "activation" of a given "association ensemble" with recall from memory. In k,ω −space, the time delay is equivalent to a modulation of the correlation function given by Eq. (37.63) corresponding to the independent phase shifts, δ_s, of the correlation function (Eq. (37.106)) of the separate "associated" "groups of SFCs". During "string" ordering by the Matrix Method of Analysis,

> the independent phase shifts, δ_s, may modify the order of the Fourier series of the "string" representing information. In addition, the independent phase shifts, δ_s, may initially modify the content of the "string" by altering the correlation function (Eq. (37.106)) to cause information to be "associated" which otherwise would not likely be or inhibit the "association" of information which otherwise would be. These mechanisms further provide for information with novel conceptual content.

Several examples are also given in the Brief Description of the Drawings:

> FIGURES 16A, 16B, and 16C illustrate plots of the probability $P_A(\phi)$ (Eq. (37.106a)) of association of the corresponding Fourier series based on a first active association ensemble coupling with a second association ensemble as a function of frequency difference angle, ϕ_s, coupling cross section amplitude, β_s^2, and phase shift, $\delta_s = 0$ wherein the parameter β_s^2=0.01, 0.25, and 1.00, respectively, in accordance with the invention;
>
> FIGURES 17A, 17B, 17C, and 17D illustrate plots of the probability $P_A(\phi)$ (Eq. (37.106a)) of association of the corresponding Fourier series based on a first active association ensemble coupling with a second association ensemble as a function of frequency difference angle, ϕ_s, and phase shift, , for the coupling cross section amplitude, $\beta_s^2 = 0.25$, wherein the parameter δ_s=0, 0.25π, 0.50π, and π, respectively, in accordance with the present invention;

In view of the above discussion, Applicants respectfully submit that the way to obtain a value for δ_s is clear from the specification. Accordingly, Applicants respectfully request that the outstanding objection to the Specification be reconsidered and withdrawn.

CONCLUSION

In view of the above amendment, Applicant respectfully submit that the pending application is in condition for allowance. If the Examiner deems that issues persist, the Examiner is encouraged to contact the Applicants' attorney.

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Respectfully submitted,

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